

Medial pterygoid muscle traumatic myositis ossificans: A case report from Saudi Arabia

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ABSTRACT

Traumatic myositis ossificans or myositis ossificans traumatica (MOT) is a heterotopic bone formation within a muscle (or group of muscles) and soft tissues. It occurs usually in deep muscles. Maxillofacial muscles including muscles of mastication are rarely affected. We report a lesion in a 49-year-old lady with a chief complaint of pain and some limitation in mouth opening and a history of trauma. Radiological examination using CBCT shows TMJ osteoarthritic changes and a lesion in the area of medial pterygoid muscle, which was diagnosed as MOT and managed conservatively.

Keywords: Traumatic, Myositis, Ossificans, Heterotopic, Bone formation

1. INTRODUCTION

Traumatic myositis ossificans or myositis ossificans traumatica (MOT) is a pathologic condition characterized by the formation of bone in or between the muscles (due to trauma and) is limited to one muscle or group of muscles (Stevens, 1913). It could occur in any deep muscle. Maxillofacial MOT is rare (Hanisch et al., 2018). We report a case with history, signs, symptoms, and radiological findings highly suggestive of MOT in the medial pterygoid muscle.

2. CASE REPORT

A 49-year-old lady presented with chief complaint of pain in the TMJ and limited mouth opening. The pain started approximately 2 years prior to the visit through 2018-2020, and it has been persistent. It becomes sharp with chewing and wide mouth opening. In order to relieve the pain she closes her mouth and uses hot packs with occasional jaw exercise and usage of occlusal splints. She has been using non-steroidal anti-inflammatory drugs (NSAID) as pain killer. Currently, TMJ pain is stable and comes only during chewing.

Medical history revealed sinusitis and migraine. The patient has had a road traffic accident when she was 8 years old. Multiple fractures including clavicle, pelvis, orbital floor and comminuted skull fractures were treated with closed reduction (no open reduction and internal fixation (ORIF) was done). She was hospitalized for a year and a half taking intra-venous analgesics and sometimes sedation for the pain. One complication that persisted is vertical dystopia in the right eye with no diplopia. She underwent skin grafting and



annual scar repair and revision for hand, leg and other areas for around 9 subsequent years post trauma. Clinical examination showed maximum mouth opening of 3.5 cm. There was no tenderness, deviation or swelling. There was no clicking but crepitation that the patient can also feel.

CBCT was prescribed in both open and closed mouth positions. The images show that the condyles are within normal position in the closed mouth. There are bilateral osteophytes and left flattening and eroded condylar head. In the open mouth position, the condyles translate with no apparent restricted motion. However, the left condyle deviates laterally away from the glenoid fossa with bone to bone approximation. In addition, an incidental finding has been observed. There is a well-defined bony radiopaque mass in the area of the left medial pterygoid muscle approximating the lateral pterygoid plate (Figures 1-4). It measures approximately 6 mm in the maximum diameter. Tooth #18 is impacted in a disto-angular position approximating the right maxillary sinus. Based on those findings, the diagnosis of TMJ osteoarthritic changes and myositis ossificans traumatica has been established. The possibility of trapped bone fragment cannot be ruled out. A conservative treatment was adopted due to the possible complication from surgery.

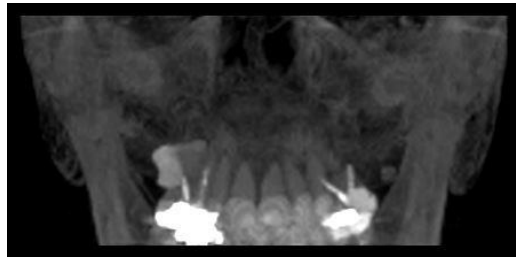


Figure 1 Frontal Maximum Intensity CBCT view showing the lesion in the left pterygoid space.

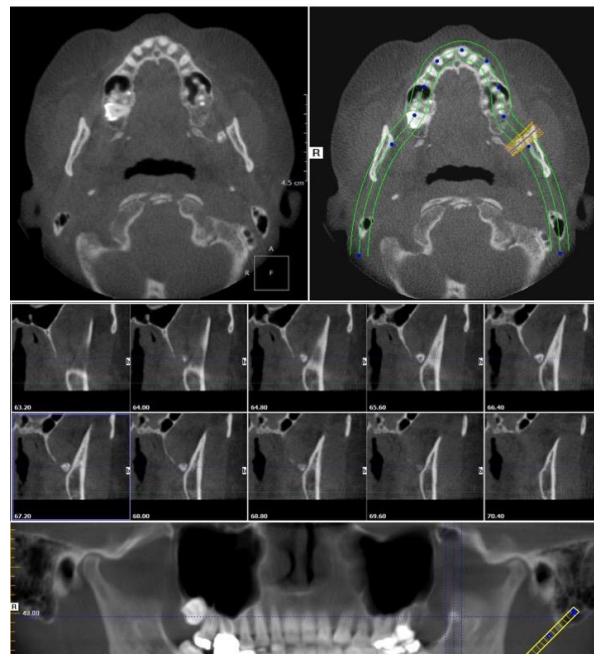


Figure 2 Axial, panoramic reconstruction, and cross-sectional images showing the density, size and location of the bony lesion and its proximity to the left lateral pterygoid plate.

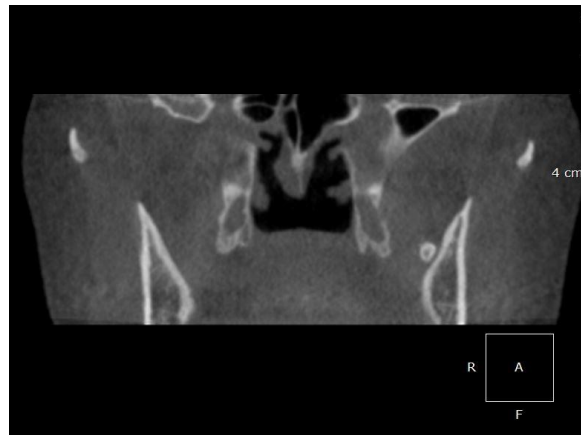


Figure 3 Coronal CBCT slice showing the location of the bony lesion in the area of the left medial pterygoid muscle.

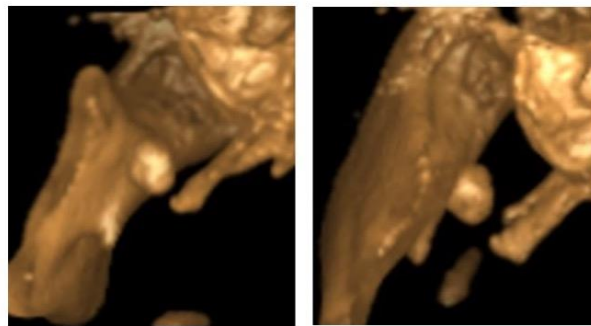


Figure 4 3D CBCT reconstructions showing the proximity to the lateral pterygoid plate.

3. DISCUSSION

MOT is a disease that is characterized by non-neoplastic, heterotopic bone formation within a muscle or a group of muscles and soft tissue after trauma. Some authors disagree with this name due to the lack of inflammation in some cases as well as the absence of muscle and bone tissues in some lesions (Ackerman, 1958). Other names that have been used in the literature include Myositis Ossificans Circumscripta, Heterotrope Ossifikation, and Fibro-dysplasia Ossificans.

Maxillofacial MOT could occur at almost any muscle. Masseter muscle (Steiner et al., 1997), medial pterygoid (Choudhary et al., 2012; Boffano et al., 2014), lateral pterygoid (Spinzia et al., 2014), and temporalis (Schiff and Meara, 2013; Saka et al., 2002) have been reported to be affected in this respective order. Other muscles with less prevalence include digastric muscle (Utsunomiya et al., 2016) and mental muscle (Johansson, 1984). MOT could also occur in a group of muscles (Jayade et al., 2013). Although male to female ratio is 2.4:1 (Boffano et al., 2014), and although the site most often affected is the masseter muscle (Arima et al., 1984), women have a higher risk of developing MOT with respect to dental treatment (Hanisch et al., 2018). If MOT occurred after dental treatment, medial pterygoid muscle has 66% chance compared to other muscles (Hanisch et al., 2018). Maxillofacial MOT is usually associated with history of trauma, previous surgical intervention, or injection (Boffano et al., 2014). And most cases are due to a single trauma (Arima et al., 1984).

For MOT diagnosis, panoramic and conventional radiographs could be helpful in some cases (Steiner et al., 1997; Johansson, 1984) but advanced imaging is always recommended for both diagnosis and treatment planning (Marx and Stern, 2012). It is important to rule out malignancy (like sarcomas). In our case, the radiological findings are very benign and there are no clinical alarming findings. The presence of history of trauma excludes the Idiopathic Myositis Ossificans (aka Non-traumatic MO (Utsunomiya et al., 2016; Samuelson, 1976)). In addition, history of trauma rules out myositis ossificans progressiva (MOP), aka fibro-dysplasia ossificans progressiva, which describes a genetic autosomal dominant disease.

The decision of conservative treatment has been an option for many authors in the literature (Boffano et al., 2014). It was based on risk/benefit assessment. Surgical intervention is associated with high morbidity and the patient would still need physical therapy and exercises. The chief complaint of the patient was pain and she was satisfied with symptomatic treatment. There was no severe

restriction of mouth opening or range of motion that needs surgical treatment. Although we've elected to conservatively manage the case, the patient is under close follow up for any potential worsening of her symptoms.

For similar cases, there is no one specific treatment or management approach. It is always recommended to evaluate the chief complaint, available data, and the risk/benefit before establishing diagnosis and treatment plan. For the current case, definitive diagnosis was not possible. However, the case is highly suggestive of MOT.

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Informed consent

Written & Oral informed consent was obtained from all individual participants included in the study.

Conflicts of interest

The authors declare that they have no conflict of interest.

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Data and materials availability

All data associated with this study are present in the paper.

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